What is claimed is:

1. A method for displaying a grayscale of a plasma display panel, by which an externally input image signal is divided into frames and each frame is divided into a plurality of subfields allocated a predetermined brightness value, the method comprising:

(a) detecting a frequency of each grayscale, where the frequency indicates the number of cells to be displayed for each grayscale in a frame;

(b) comparing the frequency of each grayscale with a predetermined reference value; and

(c) adjusting at least one among the number of grayscales in the frame and the number of subfields in the frame according to a result of the comparison to set subfields in the frame.

2. The method of claim 1, wherein step (c) comprises enhancing low grayscale display by increasing at least one among the number of grayscales in the frame and the number of subfields in the frame and enhancing contrast by decreasing the number of subfields in the frame.

3. The method of claim 2, wherein step (a) comprises detecting a detection frequency which is a sum of frequencies of grayscales higher than a predetermined reference grayscale, and the low grayscale display is enhanced in step (c) when the detection frequency is less than the predetermined reference value.

4. The method of claim 3, wherein when the detection frequency is equal to or greater than the predetermined reference value, the contrast is enhanced in step (c).

5. The method of claim 4, wherein when 256 grayscales are displayed in each frame, the predetermined reference grayscale is 250.

6. A method of displaying a grayscale of a plasma display panel, by which an externally input image signal is divided into frames and each frame is divided into a plurality of subfields allocated a predetermined brightness value, the method comprising:

(a) detecting an average signal level of the image signal in a frame;

(b) comparing the detected average signal level with a predetermined reference level;

(c) detecting a frequency of each grayscale which indicates the number of cells to be displayed for each grayscale in the frame;

(d) comparing the frequency of each grayscale with a predetermined reference value; and

(e) adjusting at least one among the number of grayscales in the frame and the number of subfields in the frame according to the result of comparing the average signal level and a result of comparing the sum of the frequencies to set subfields in the frame.

7. The method of claim 6, further comprising adjusting a discharge time to be in inverse proportion to the average signal level.

8. The method of claim 6, wherein step (e) comprises:

enhancing low grayscale display by increasing at least one among the number of grayscales in the frame and the number of subfields in the frame;

enhancing contrast by decreasing the number of subfields in the frame, alleviating a pseudo-contour by decreasing the number of grayscales in the frame; and

setting a default mode by setting the number of grayscales in the frame and the number of subfields in the frame to predetermined default values, respectively.

9. The method of claim 8, wherein when the average signal level is higher than a first predetermined reference level, the pseudo-contour is alleviated in step (e).

10. The method of claim 9, wherein when the average signal level is lower than the first predetermined reference level and higher than a second predetermined reference level, the default mode is set in step (e).

11. The method of claim 10, wherein when the average signal level is lower than the second predetermined reference level, step (c) is performed.

12. The method of claim 11, wherein step (c) comprises detecting a detection frequency which is the sum of frequencies of grayscales higher than a predetermined reference grayscale, and the low grayscale display is enhanced in step (e) when the detection frequency is less than the predetermined reference value.

13. The method of claim 12, wherein when the detection frequency is equal to or greater than the predetermined reference value, the contrast is enhanced in step (e).

14. The method of claim 12, wherein when 256 grayscales are displayed in each frame, the predetermined reference grayscale is 250.

15. An apparatus for displaying a grayscale of a plasma display panel, which divides an externally input image signal into frames and divides each frame into a plurality of subfields allocated a predetermined brightness value, the apparatus comprising:

an image signal detection unit, which detects a frequency of each grayscale, where the frequency indicates the number of cells to be displayed for each grayscale, in a frame of the image signal;

an image characteristic determination unit, which determines an image characteristic necessary for grayscale display using the frequency of each grayscale detected by the image signal detection unit;

a subfield setting unit, which sets the number of grayscales in the frame and the number of subfields in the frame according to the image characteristic determined by the image characteristic determination unit; and

a subfield generation unit, which forms data for each subfield such that an image can be displayed at a brightness level corresponding to a setup by the subfield setting unit, and allocates a brightness level to each subfield.

16. The apparatus of claim 15, wherein the subfield setting unit comprises a grayscale number setter, which sets the number of grayscales in the frame, and a subfield number setter, which sets the number of subfields in the frame.

17. The apparatus of claim 15, wherein the image signal detection unit detects a detection frequency which is the sum of frequencies of grayscales higher than a predetermined reference grayscale, and the subfield setting unit increases the number of grayscales in the frame and the number of subfields in the frame when the detection frequency is less than a predetermined reference value and decreases the number of subfields in the frame when the detection frequency is equal to or greater than the predetermined reference value.

18. An apparatus for displaying a grayscale of a plasma display panel, which divides an externally input image signal into frames and divides each frame into a plurality of subfields allocated a predetermined brightness value, the apparatus comprising:

an image signal detection unit comprising an average signal level detector, which detects an average signal level of the image signal in a frame, and a frequency-of-grayscale detector, which detects a frequency of each grayscale, which indicates the number of cells to be displayed for each grayscale, in the frame;

an image characteristic determination unit, which determines an image characteristic necessary for grayscale display according to the average signal level and the frequency of each grayscale;

a subfield setting unit, which sets the number of grayscales in the frame and the number of subfields in the frame according to the image characteristic determined by the image characteristic determination unit; and

a subfield generation unit, which forms data for each subfield such that an image can be displayed at a brightness level corresponding to a setup by the subfield setting unit, and allocates a brightness level to each subfield.

19. The apparatus of claim 18, wherein the image signal detection unit operates the frequency-of-grayscale detector only when the average signal detected by the average signal level detector is lower than a predetermined reference level.

20. The apparatus of claim 18, wherein the subfield setting unit comprises:

a sustain pulse number setter, which sets the number of sustain pulses in the frame;

a grayscale number setter, which sets the number of grayscales in the frame; and

a subfield number setter, which sets the number of subfields in the frame.

21. The apparatus of claim 18, wherein the frequency-of-grayscale detector detects a detection frequency which is the sum of frequencies of grayscales higher than a predetermined reference grayscale, and the subfield setting unit increases the number of grayscales in the frame and the number of subfields in the frame when the detection frequency is less than a predetermined reference value and decreases the number of subfields in the frame when the detection frequency is equal to or greater than the predetermined reference value.

22. The apparatus of claim 18, wherein when the average signal level is higher than a predetermined reference level, the subfield setting unit decreases the number of grayscales in the frame to decrease brightness difference between subfields in the frame so that generation of pseudo-contours in a motion picture is suppressed.